

Abstract of the Disclosure

A free space optical communication network includes plural stations, some capable of functioning as both transceivers and repeaters, and to a station having such capability. The stations include a transmitter array having many optical emitter elements, each having an associated beam and a receiver having a receiver array with many optical detector element areas having beams corresponding with the beam of an emitter element of a transmitting optical station of the network. An optical arrangement associated with the arrays and the arrays themselves are such that beams associated with different elements of each array can be coupled with different stations of the network. The stations include one or more of the following features: (1) overlapping beams, (2) avalanche photodiodes in the receive array, (3) a filter arrangement for enabling only a desired wavelength to be transmitted from and received by the arrays, and (4) transmit and receive arrays at different locations in the stations so that photons emitted from the transmit array do not interfere with detectors of the receive array.